

IN THE CLAIMS

The claims of the application, as amended are:

1. (Currently Amended) An electrical heating arrangement comprising: a cooking plate (4) having an upper surface (6) for receiving a cooking utensil (8), and a lower surface (10); an electric heater (12) incorporating at least one electric heating element (20), the heater being supported in contact with the lower surface of the cooking plate; and a temperature sensor assembly (30), ~~characterised in that~~ wherein the temperature sensor assembly comprises: an elongate substantially planar substrate (32) located in the heater and extending at least partially across the heater from a peripheral region (34) at least to a central region (36) of the heater, the substrate having an upper surface (38) located in contact with, or in close proximity to, the lower surface of the cooking plate, and also having a lower surface (66), the upper and/or lower surface or surfaces of the substrate being provided with at least one first temperature-sensitive electrical resistance element (40) of film form at a first region (42) of the substrate proximate the peripheral region of the heater, the upper and/or lower surface or surfaces of the substrate being provided with at least one second temperature-sensitive electrical resistance element (54; 54A; 54B) of film form at a second region (56) of the substrate proximate the central region of the heater, the first and second temperature-sensitive electrical resistance elements being provided with electrical connecting leads (44, 46, 58, 60) for electrical connection to external control circuit means (28) for the heater; at least one support member (70, 102) secured to the substrate and underlying at least the first region of the substrate; and thermal insulation means (74) interposed between at least the lower

surface of the substrate and the at least one support member substantially only at the first region of the substrate.

2. (Currently Amended) An arrangement as claimed in claim 1, ~~characterised in that~~ wherein the thermal insulation means (74) shields the at least one first temperature-sensitive electrical resistance element (40) and a region (98) of the cooking plate (4) overlying the at least one first temperature-sensitive electrical resistance element, from direct thermal radiation from the at least one electric heating element (20).

3. (Currently Amended) An arrangement as claimed in claim 1 ~~or 2, characterised in that~~ wherein the at least one first temperature-sensitive electrical resistance element (40) is arranged for monitoring temperature of the cooking utensil (8) through the cooking plate (4).

4. (Currently Amended) An arrangement as claimed in claim 1, ~~2 or 3, characterised in that~~ wherein the at least one second temperature-sensitive electrical resistance element (54; 54A; 54B) is arranged for monitoring temperature of the lower surface (10) of the cooking plate (4).

5. (Currently Amended) An arrangement as claimed in ~~any preceding claim, characterised in that~~ claim 1, wherein at least two second temperature-sensitive electrical resistance elements (54; 54A; 54B) are provided on the upper and/or lower surfaces (38, 66) of the substrate (32).

6. (Currently Amended) An arrangement as claimed in ~~any preceding claim, characterised in that~~ claim 1, wherein the upper surface (38) of the substrate (32) is arranged at a distance of 0 mm to about 3.5 mm from the lower surface (10) of the cooking plate (4).

7. (Currently Amended) An arrangement as claimed in ~~any preceding claim, characterised in that~~ claim 1, wherein the at least one support member (70, 102) is of channel form for receiving at least the first region (42) of the substrate (32) and the thermal insulation means (74).

8. (Currently Amended) An arrangement as claimed in claim 1, ~~characterised in that~~ wherein the thermal insulation means (74) is additionally interposed between the at least one support member (70, 102) and one or more side edges of the substrate (32) at the first region (42) of the substrate.

9. (Currently Amended) An arrangement as claimed in ~~any preceding claim, characterised in that~~ claim 1, wherein the thermal insulation means (74) ~~comprises~~ is selected from at least one of a thin layer of microporous thermal insulation material ~~and/or~~ and alternative thermal insulation material.

10. (Currently Amended) An arrangement as claimed in claim 9, ~~characterised in that~~ wherein the alternative insulation material is selected from vermiculite, perlite, mineral fibres, calcium silicate and inorganic foam, and mixtures thereof.

11. (Currently Amended) An arrangement as claimed in ~~any preceding claim, characterised in that~~ claim 1, wherein the thermal insulation means (74) has a thickness of from 1 mm to 10 mm between the substrate (32) and the at least one support member (70, 102).

12. (Currently Amended) An arrangement as claimed in claim 11, ~~characterised in that~~ wherein the thermal insulation means (74) has a thickness of from 2 mm to 4 mm.

13. (Currently Amended) An arrangement as claimed in ~~any preceding claim, characterised in that~~ claim 1, wherein the first and second regions (42, 56) of the substrate (32) have substantially the same width.

14. (Currently Amended) An arrangement as claimed in ~~any of claims 1 to 12, characterised in that~~ claim 1, wherein the second region (56) of the substrate (32) is narrower than the first region (42) of the substrate.

15. (Currently Amended) An arrangement as claimed in ~~any preceding claim, characterised in that~~ claim 1, wherein a single support member (70, 102) underlies both the first and second regions (42, 56) of the substrate (32).

16. (Currently Amended) An arrangement as claimed in claim 15, ~~characterised in that~~ wherein the support member (70, 102) is provided with one or more apertures (104) at one or more regions thereof underlying the second region (56) of the substrate (32) ~~and/or is provided with a coating of a material of high thermal emissivity~~, whereby exposure of the second region of the substrate to the effect of thermal radiation from the at least one electric heating element of the heater is maximised.

17. (Currently Amended) An arrangement as claimed in ~~any of claims 1 to 14, characterised in that~~ claim 1, wherein separate support members (70, 102) are provided for the first and second regions (42, 56) of the substrate (32).

18. (Currently Amended) An arrangement as claimed in ~~any preceding claim, characterised in that~~ claim 1, wherein the at least one support member (70, 102) ~~comprises~~ is selected from ceramic, ~~and/or metal, and combinations thereof.~~

19. (Currently Amended) An arrangement as claimed in ~~any preceding claim, characterised in that~~ claim 1, wherein thermal conduction reduction means (100) is provided to reduce or minimise thermal conduction along the substrate (32) from the second region (56) thereof to the first region (42) thereof.

20. (Currently Amended) An arrangement as claimed in claim 19, ~~characterised in that~~ wherein the thermal conduction reduction means comprises providing the substrate (32) of small cross-sectional area, ~~and/or providing the substrate with one or more apertures (104) therethrough at a location intermediate the first and second regions (42, 56) thereof and/or providing the substrate of low thermal conductivity material.~~

21. (Currently Amended) An arrangement as claimed in claim 20, ~~characterised in that~~ wherein the substrate (32) ~~comprises~~ is selected from alumina, steatite, forsterite, glass-ceramic, fused silica, celsian, aluminium titanate, cordierite, zirconia, alumina-zirconia blends, reaction bonded silicon nitride, ~~or~~ and a thin metal strip provided with a coating of a dielectric material.

22. (Currently Amended) An arrangement as claimed in claim 21, ~~characterised in that~~ wherein the substrate (32) comprises alumina of 87 to 99 percent purity.

23. (Currently Amended) An arrangement as claimed in claim 21, ~~characterised in that~~ wherein the substrate (32) comprises stainless steel provided with the coating of dielectric material.

24. (Currently Amended) An arrangement as claimed in ~~any preceding claim, characterised in that~~ claim 1, wherein the substrate (32) has a thickness from about 0.25 mm to about 3 mm.

25. (Currently Amended) An arrangement as claimed in claim 24, ~~characterised in that~~ wherein the substrate (32) has a thickness from about 0.5 mm to about 1 mm.

26. (Currently Amended) An arrangement as claimed in ~~any preceding claim, characterised in that~~ claim 1, wherein the substrate (32) and the support member (70, 102) extend outwardly from the heater (12) at a periphery of the heater and are secured to the heater at the periphery of the heater.

27. (Currently Amended) An arrangement as claimed in claim 26, ~~characterised in that~~ wherein the support member (70, 102) is secured to the heater (12) by means of a mounting bracket (80).

28. (Currently Amended) An arrangement as claimed in claim 27, ~~characterised in that~~ wherein the mounting bracket (80) ~~comprises~~ is selected from stainless steel, plated mild steel, and ~~or~~ a high temperature resistant plastics material.

29. (Currently Amended) An arrangement as claimed in claim 27 ~~or 28, characterised in that,~~ wherein the mounting bracket (80) is arranged to bias the substrate (32) towards the lower surface (10) of the cooking plate (4).

30. (Currently Amended) An arrangement as claimed in claim 29, ~~characterised in that]~~ wherein the mounting bracket (80) is ~~of~~ selected from cantilevered ~~or~~ form and spring-loaded form.

31. (Currently Amended) An arrangement as claimed in ~~any preceding claim, characterised in that~~ claim 1, wherein the electrical connecting leads (44, 46, 58, 60) for the first and second temperature-sensitive electrical resistance elements (40; 54, 54A, 54B) are of film form on the substrate (32) and extend to an end of the substrate located at a periphery of the heater (12).

32. (Currently Amended) An arrangement as claimed in claim 31, ~~characterised in that~~ wherein the film-form electrical connecting leads (44, 46, 58, 60) are provided with electrical terminal means (48, 50, 62, 64), adapted for electrical connection to external electrically conducting leads (94, 96) leading to the external control circuit means (28).

33. (Currently Amended) An arrangement as claimed in claim 31 ~~or 32, characterised in that, wherein~~ the electrical connecting leads (44, 46, 58, 60) of film form comprise substantially the same or similar material as the temperature-sensitive electrical resistance elements (40; 54, 54A, 54B).

34. (Currently Amended) An arrangement as claimed in ~~any preceding claim, characterised in that~~ claim 1, wherein the temperature-sensitive electrical resistance elements (40; 54, 54A, 54B) comprise platinum.

35. (Currently Amended) An arrangement as claimed in ~~any preceding claim, characterised in that~~ claim 1, wherein one or more electrically insulating or passivation layers is or are provided on the upper and/or lower surface or surfaces (38, 66) of the substrate (32) at least overlying the at least one first and/or the at least one second temperature-sensitive electrical resistance element or elements 40; 54; 54A, 54B).

36. (Currently Amended) An arrangement as claimed in ~~any preceding claim, characterised in that~~ claim 1, wherein the substrate (32) is secured to the at least one support member (70, 102) by means selected from rivets, bolts ~~or~~, and pins (78).

37. (Currently Amended) An arrangement as claimed in ~~any preceding claim, characterised in that~~ claim 1, wherein the cooking plate (4) comprises glass-ceramic material.

38. (New) An arrangement as claimed in claim 15, wherein the support member (70, 102) is provided with a coating of a material of high thermal emissivity, whereby exposure of the second region of the substrate to the effect of thermal radiation from the at least one electric heating element of the heater is maximised.

39. (New) An arrangement as claimed in claim 19, wherein the thermal conduction reduction means comprises providing the substrate with one or more apertures (104) there-through at a location intermediate the first and second regions (42, 56) thereof.

40. (New) An arrangement as claimed in claim 19, wherein the thermal conduction reduction means comprises providing the substrate of low thermal conductivity material.